

Work Order ID 55760

January 29, 2010 1:25:42 PM



Page 1

Item ID: D407-667-205

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Aft

Start Date: 1/29/10 Start Qty: 1.00



Cust Item ID:

Required Date: 2/08/10 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: *MF*Date: *10-1-29*

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D407-667-245

Rev F

0.00

100



DC

DOCUMENT CONTROL

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D407-667-205 CHG006

*5/10/2015**MF 10/02/25*

110



Packaging

Packaging

Memo

0.00

0.00

Packaging

*DP**10-2-2*

120



CNC Bend 1

BENDING MACHINE - CROSSTUBES

Memo

0.00

0.00

CNC Delta 100 Bender

1-Bend tube as per Dwg D407-667-245 using CNC bender program 407 Aft and Folio FT

*DP**10-2-2*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Start Date: 1/29/10 Start Qty: 1.00



Cust Item ID:

Required Date: 2/08/10 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

130

QC15- Crosstube Dimensional Check

0.00

78.10/02/02

0.00



QC

Memo

Quality Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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Cust Item ID:

Required Date: 2/08/10 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

0.00



Crosstubes

Crosstubes

Memo

0.00

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245.

6-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Note: Aft side has 3x top holes.

7-Drill Fwd rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Drill only the top (3) holes.

8-C'sink holes as per Dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.

9- Scribe tube to identify on the inner chamfer in the cuff D# and B#

10-Deburr & Inspect for surface damage. Repair damage within limits as per

AWM / MP
10-02-03

AWM 10-2-4

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Cust Item ID:

Required Date: 2/08/10 Req'd Qty: 1.00

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Dwg D407-667-245

150

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

1 - - AWM10-2.4

160

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

S 10/2/10

170

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

S 10/2/10

(40)

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Revision ID:

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Item Name: Crosstube Aft

Start Date: 1/29/10 Start Qty: 1.00



Cust Item ID:

Required Date: 2/08/10 Req'd Qty: 1.00

Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	Outsource process - NDT per QSI038 4.1	0.00							
	Outsource2								
	Memo	0.00							
	Outsource process - NDT								
	Liquid Penetrant Inspection as per QSI 0380								
	Issue P/O <u>1364</u> LPI as per ASTM 1417								
	Level 2 Attach copy of NDT results to work order								
190	Packaging	0.00							
	Packaging								
	Memo	0.00							
	Packaging								
	Ensure copy of NDT results attached to work order.								
200	QC5- Inspect part completeness to step on W/O	0.00							
	QC								
	Memo	0.00							
	Quality Control								

PT 10-2-14

PC 1/21/10

ml 10 02 17 ①

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Start Date: 1/29/10 Start Qty: 1.00

Cust Item ID:

Required Date: 2/08/10 Req'd Qty: 1.00

Customer:



Reference:

Run Start

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210  SprayPaint	SprayPaint	0.00				<u>11</u>	<u>10</u>	<u>02</u>	<u>18</u> (1)
	Memo	0.00							
	1-Prime inside and outside crosstube as per QSI 005 4.2								
	2-Paint outside crosstube with White Imron as per QSI 005 4.2								
	PRIME:								
	Start Time: <u>8:00</u>								
	Finish Time: <u>9:00</u>								
	PAINT:								
	Start Time: <u>1:00</u>								
	Finish Time: <u>2:00</u>								
220  QC	QC14- Inspect Spray Paint	0.00				<u>RT</u>	<u>10</u>	<u>02</u>	<u>22</u>
	Memo	0.00							
	Then, Wrap in plastic bag to protect from scratches								

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Stop



Item Name: Crosstube Aft

Start Date: 1/29/10 Start Qty: 1.00



Cust Item ID:

Required Date: 2/08/10 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: Date: Tooling: Date:

Stop



QC: Date: SPC (Y/N): Date:

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	Crosstubes	0.00							
Crosstubes									
Crosstubes	<p>Memo</p> <p>1-Install abrasion strips as per QSI 035 using DT8674. Install chafing shield as per Dwg D407-667-245. Note: (3) top holes should be facing up.</p> <p>2- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe</p> <p>3-Install support with magnobond and install clamps as per Dwg D407-667-245 using installation jig DT9025. Torque clamps to 80-100 in lb A/R Magnobond Batch: <u>112417</u> EXP: <u>01/2011</u></p> <p>4-Install nut plates as per Dwg D407-667-245. Touch-up rivet heads with Imron paint. → <u>W 10.02.24</u></p>	0.00							
240	QC5- Inspect part completeness to step on W/O	0.00							
QC									
Quality Control	Memo	0.00							

W 10 02 23 ①

8.02/25

②

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Item ID: D407-667-205

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Aft

Start Date: 1/29/10 Start Qty: 1.00



Cust Item ID:

Required Date: 2/08/10 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

250

Pick Kit

0.00



Packaging

Memo

0.00

Packaging

10-2-25 sf

260

QC4- 100% Inspect kits for completeness

0.00



QC

Memo

0.00

Quality Control

8 10/02/25

70

270

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and in kanban rack
Location: _____

Leve

10-2-26 sf

Work Order ID 55760

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Item ID: D407-667-205

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Aft

Start Date: 1/29/10 Start Qty: 1.00

Cust Item ID:

Required Date: 2/08/10 Req'd Qty: 1.00

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

280

QC21- Final Inspection - Work Order Release

0.00

QC

Memo

0.00

Quality Control

10/03/02 JF

U 10002.26

Picklist Print

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Page 1

Work Order ID: 55760

Parent Item: D407-667-205

Parent Item Name: Crosstube Aft

Comments: IPP Rev: C 05.09.02 Add holes for compatibility with Bell Skidtubes KJ/JLM
IPP Rev: D Added Magnobond, Rubber Cushion & Clamps 07-02-19
JLM

Start Date: 1/29/10

Required Date: 2/08/10

Start Qty: 1.00

Required Qty: 1.00

AN960JD516

Purchased No

100

Each

0.0000 18.0000

Washer

D2856-400

Manufactured No

230

f

282.9521 1.3558

Abraison Strip

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST403

282.9520842

50593

141.312084

52563

141.64

D2873-043

Manufactured No

230

Each

47.0000 2.0000

Nut Plate Assembly

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

47

45370

2

45422

1

50002

4

50871

20

53966

20

1113524 10-2-2500

ml 10 02 24

ml 10 02 24

Picklist Print

January 29, 2010 1:25:47 PM

Work Order ID: 55760



Parent Item: D407-667-205



Parent Item Name: Crosstube Aft

Start Date: 1/29/10

Required Date: 2/08/10

Comments: IPP Rev:C[105.09.02] Add holes for compatibility with Bell Skid tubes [KJ/JLM]
 IPP Rev:D Added Magnobond, Rubber Cushion & Clamps 07-02-19
 JLM

Start Qty: 1.00

Required Qty: 1.00

D2873-045 Manufactured No 230 Each 65.0000 2.0000



Nut Plate Assembly

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	65	
45210	3	
<u>50001</u>	22	
53967	20	
53968	20	

m/ 10 02 24

D2894-1 Manufactured No 230 Each 27.0000 1.0000



2.750 Support

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	27	
<u>43713</u>	8	
43881	18	
45483	1	

m/ 10 02 24

Picklist Print

January 29, 2010 1:25:47 PM

Work Order ID: 55760



Parent Item: D407-667-205



Parent Item Name: Crosstube Aft

Start Date: 1/29/10

Required Date: 2/08/10

Comments: IPP Rev: C 05.09.02 Add holes for compatibility with Bell Skidtubes KJ/JLM
IPP Rev: D Added Magnobond, Rubber Cushion & Clamps 07-02-19
JLM

Start Qty: 1.00

Required Qty: 1.00

D3190-1 Manufactured No 230 Each 26.0000 2.0000



Chafing Shield

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST

26

40109

6

47456

20

m/ 10 02 24

D407-667-205TRN Manufactured No 230 Each 2.0000 1.0000



Crosstube Turning Detail

Warehouse Loc Qty Loc Code

Location

Main Warehouse

LG

2

53653

1

53654

1

10-2-2

MS20601-AD4W8 Purchased No 230 Each 372.0000 14.0000



RIVET

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST

372

108521

200

112203

172

m/ 10 02 24

Picklist Print

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Work Order ID: 55760



Parent Item: D407-667-205



Parent Item Name: Crosstube Aft

Start Date: 1/29/10

Required Date: 2/08/10

Comments: IPP Rev:C 05.09.02 Add holes for compatibility with Bell Skidtubes KJ/JLM
IPP Rev:D Added Magnobond, Rubber Cushion & Clamps 07-02-19
JLM

Start Qty: 1.00

Required Qty: 1.00

MS21920-22

Purchased

No

230

Each

62.0000

4.0000



Clamp(per MIL-DTL-8783C)

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

62

109495

6

110260

6

111210

50

ml 10 02 24

AN5-10A

Purchased

No

260

Each

102.0000

10.0000



Bolt

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

102

107013

8

110363

2

112314

1

113149

1

113524

90

10

10-2-28

Picklist Print

January 29, 2010 1:25:47 PM

Work Order ID: 55760



Parent Item: D407-667-205



Parent Item Name: Crosstube Aft

Start Date: 1/29/10

Required Date: 2/08/10

Comments: IPP Rev:C 05.09.02 Add holes for compatibility with Bell Skidtubes KJ/JLM
IPP Rev:D Added Magnobond, Rubber Cushion & Clamps 07-02-19
JLM

Start Qty: 1.00

Required Qty: 1.00

AN5-32A

Purchased

No

260

Each

172.0000 4.0000



Bolt



SP

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

172

106242

3

106519

4

110363

17

112933

48

113121

100

4

AN5-34A

Purchased

No

260

Each

146.0000 4.0000



Bolt



10-2-25 SP

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

146

104679

2

107013

2

113149

92

113226

50

4

Picklist Print

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Work Order ID: 55760



Parent Item: D407-667-205



Parent Item Name: Crosstube Aft

Start Date: 1/29/10

Required Date: 2/08/10

Comments: IPP Rev:C 05.09.02 Add holes for compatibility with Bell Skidtubes KJ/JLM
IPP Rev:D Added Magnobond, Rubber Cushion & Clamps 07-02-19
JLM

Start Qty: 1.00

Required Qty: 1.00

MS21042L5

Purchased

No

260

Each

533.0000 4:0000



16-2-25 SP

Nut

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

533

110382

10

111636

1

112314

22

113523

300

113537

200

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Shop Packet Print

Page 6

Picklist Print

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Parent Item: D407-667-205



Parent Item Name: Crosstube Aft

Start Date: 1/29/10

Required Date: 2/08/10

Comments: IPP Rev:C 05.09.02 Add holes for compatibility with Bell Skidtubes KJ/JLM
 IPP Rev:D Added Magnobond, Rubber Cushion & Clamps 07-02-19
 JLM

Start Qty: 1.00

Required Qty: 1.00

MS21920-25 Purchased No 260 Each 198.0000 2.0000



Clamp(per MIL-DTL-8783C)

Warehouse Loc Qty Loc Code

Location

Main Warehouse

CA

25

113744

25

Main Warehouse

ST

173

107456

2

108111

3

108975

17

109181

42

109644

10

111282

4

111429

1

112495

1

112919

18

113281

25

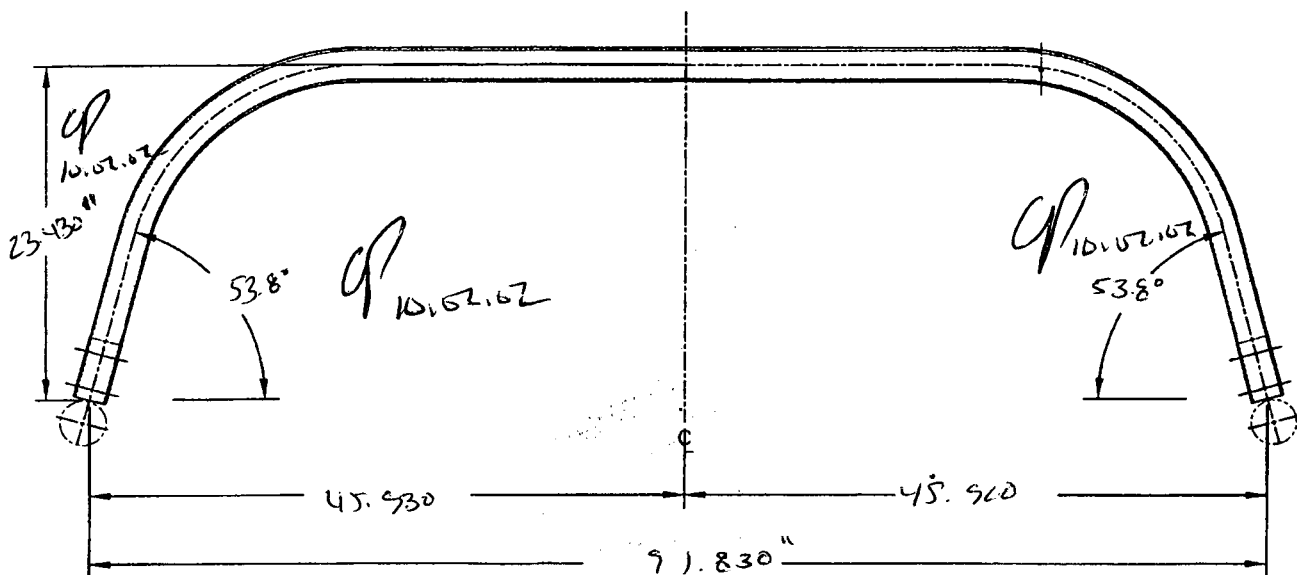
113282

50

W 10 02 23

DART AEROSPACE LTD		Work Order:	55760
Description: Crosstube High Aft (407)		Part Number:	D407-667-205
Inspection Dwg: D407-667-245 Rev: F		Page 1 of 1	

Required Dimension	Min	Max
Height	23.46	23.58
1/2 Span	45.86	45.98
Angle	54	56
Total Span	91.72	91.96



Comments
Angles below tol. Height below tol.
OK CP 10.02.02
per QSI 012

QC15 Inspection	8
Date	10/02/12

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.06.22	Dwg Rev updated	KJ	

Item	QTY -245	PART NUMBER	DESCRIPTION
1	X	D407-667-245	CROSSTUBE ASSEMBLY (407 HIGH AFT)
2	1	D6011-115	CROSSTUBE
3	2	D2856-400-773	ABRASION STRIP
4	2	D2873-043	NUT PLATE
5	2	D2873-045	NUT PLATE
6	1	D2894-1	SUPPORT
7	2	D3190-1	CHAFING SHIELD
8	2	D3595-063-430	RUBBER CUSHION
9	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
10	4	MS21920-22	CLAMP
11	2	MS21920-25	CLAMP (OR MS21920-24)
12	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947- 100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

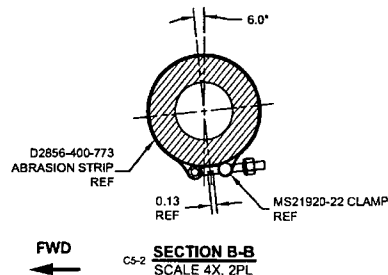
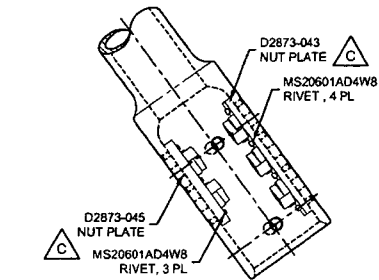
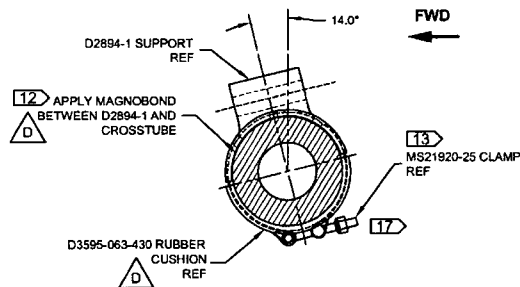
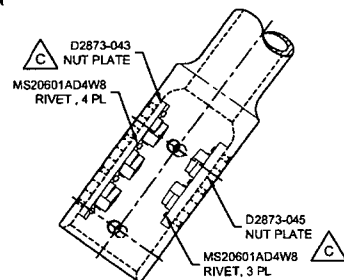
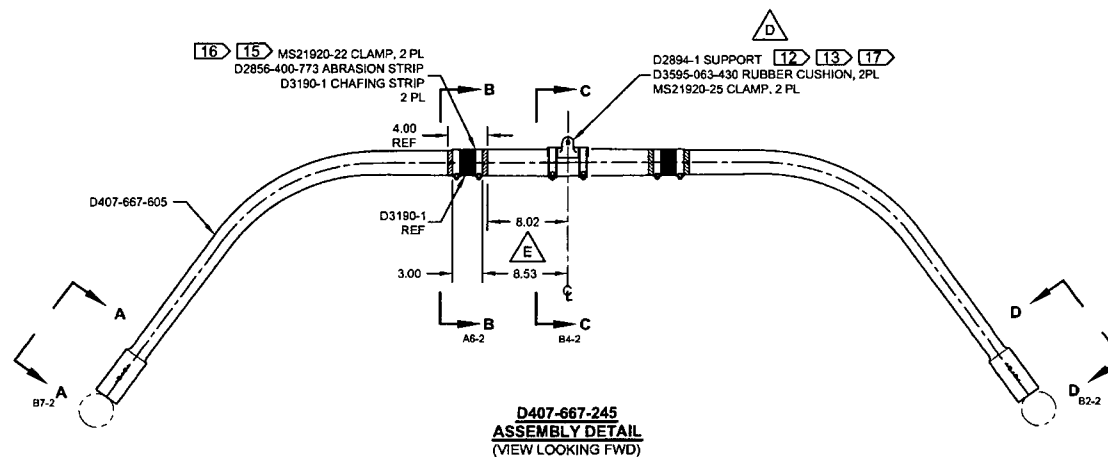
- 1) MATERIAL: MANUFACTURED FROM D6011-115
FINISHED LENGTH = 112.91±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-245" AND BATCH NUMBER ON
INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 27.7 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO
BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND
6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO
PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS WITH D3595-063-430 RUBBER CUSHIONS TO SECURE D2894-1
SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE
SUPPORT.
NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS.
ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF
CROSSTUBE, PER QSI 035.
- 16) INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS ON BOTTOM SIDE OF CROSSTUBE
OPPOSITE D2894-1 SUPPORT.
- 17) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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WORK ORDER
NO. 55760

BA10-1-29

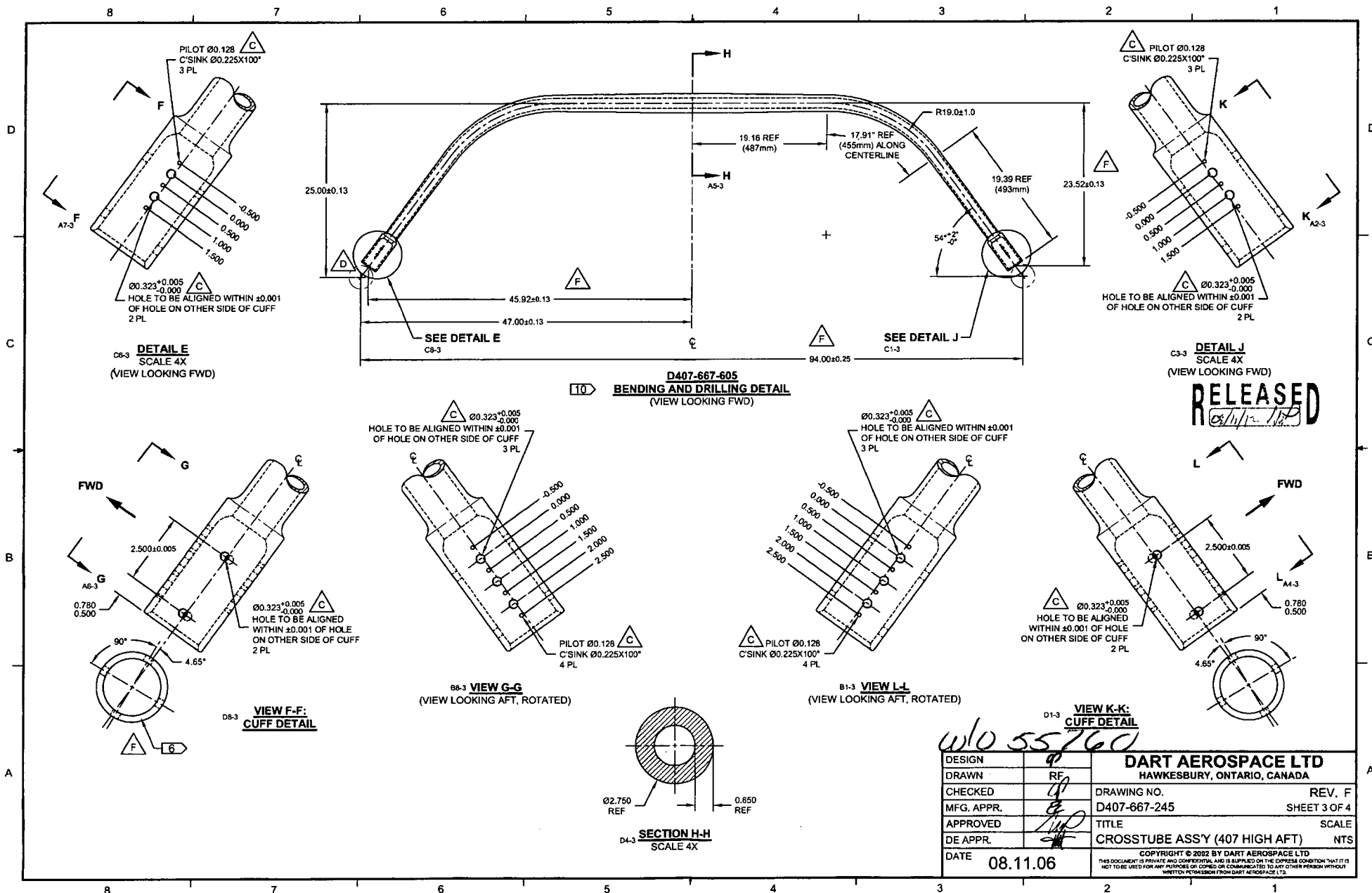
RELEASED
08/11/06

F	REFORMAT NOTES TO NEW STANDARDS (ZN B8-1); RELOCATED FLAG # 6 (ZN A8-3) PER NCR 210; REMOVED REF. & ADD TOLERANCES (ZN C6-3, C4-3 & D2-3)	RF	08.11.06
E	8.02 AND 8.53 WERE 8.40 AND 8.90 (ZN D5-2); REORGANIZED VIEWS AND REFORMATED DRAWING TO CURRENT STANDARDS. REASONS: CLAMPS MOVED 0.375 TOWARD CL TO ELIMINATE INTERFERENCE WITH AIRCRAFT MOUNTS. REFERENCE: PAR#08-21 AND ECN#1225	MB	08.07.24
D	ADD VIEW FOR OEM SKID HOLES, ROTATE ORIENTATION OF CLAMPS SECTION F-F, REMOVE -851 ABRASION STRIP, ADD MAGNOBOND 6398, ADD CUSHION	PH	07.02.07
C	ADD HOLES AND NUT PLATES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES	PH	05.07.26
B	ADD CHAFING SHIELD	CP	03.05.21
A	NEW ISSUE	CP	02.05.13
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>RF</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D407-667-245 REV. F SHEET 1 OF 4 TITLE CROSSTUBE ASS'Y (407 HIGH AFT) SCALE NTS <small>COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	
DRAWN	<i>RF</i>		
CHECKED	<i>RF</i>		
MFG. APPR.	<i>RF</i>		
APPROVED	<i>RF</i>		
DE APPR.	<i>RF</i>		
DATE	08.11.06		

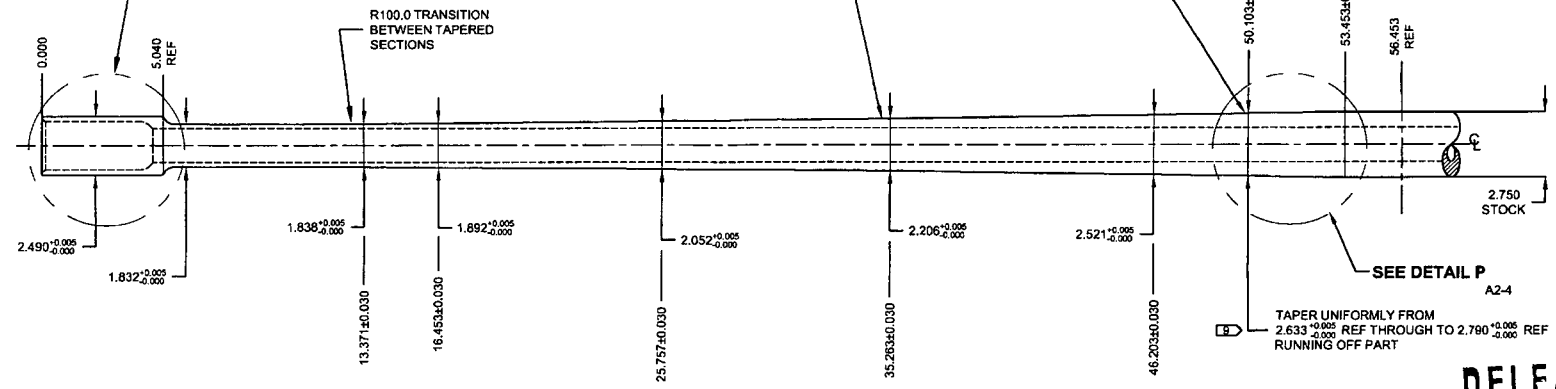


RELEASED

DESIGN	90	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. F
MFG. APPR.	RF	D407-667-245	SHEET 2 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE ASS'Y (407 HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

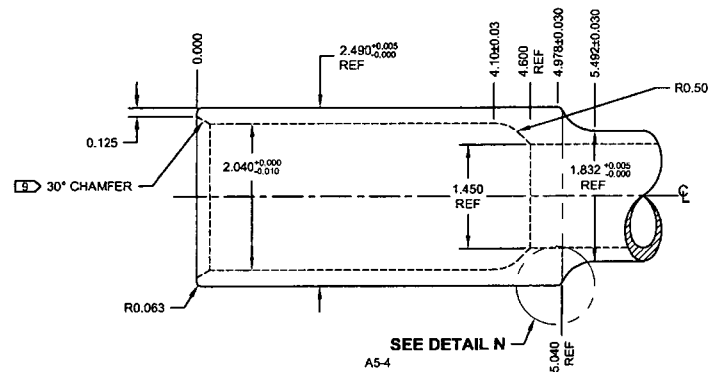


SEE DETAIL M
A7-4

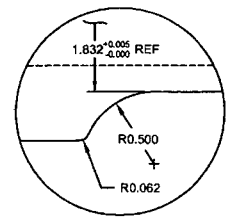


D407-667-245 MACHINING DETAIL

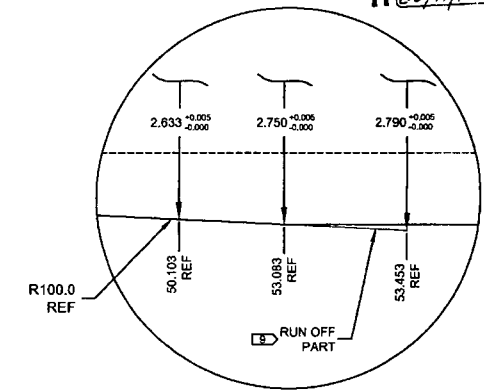
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D8-4 **DETAIL M: CROSSTUBE CUFF**
SCALE 3X



B6-4 **DETAIL N: CUFF TRANSITION**
SCALE 2X



C1-4 **DETAIL P: TAPER RUN-OFF**
NOT TO SCALE

DESIGN	90	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	CP	DRAWING NO.	REV. F
MFG. APPR.	CP	D407-667-245	SHEET 4 OF 4
APPROVED	CP	TITLE	SCALE
DE APPR.	CP	CROSSTUBE ASS'Y (407 HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

5.0 PARTS LIST

Item	Qty -011	Qty -013	Qty -015	Qty -101	Qty -201	Qty -103	Qty -203	Qty -105	Qty -205	Part Number	Description
	X									D206-667-011	SPACER BLOCK KIT
		X								D206-667-013	NUT PLATE KIT (-101/-103/-105/-203/-205)
			X							D206-667-015	NUT PLATE KIT (-201)
				X						D206-667-101	CROSSTUBE INSTALLATION, 206A/B HIGH FWD
					X					D206-667-201	CROSSTUBE INSTALLATION, 206A/B HIGH AFT
						X				D206-667-103	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH FWD
							X			D206-667-203	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH AFT
								X		D407-667-105	CROSSTUBE INSTALLATION, 407 HIGH FWD
									X	D407-667-205	CROSSTUBE INSTALLATION, 407 HIGH AFT
1				1						D206-667-141	CROSSTUBE ASSEMBLY, 206A/B HIGH FWD
2					1					D206-667-241	CROSSTUBE ASSEMBLY, 206A/B HIGH AFT
3						1				D206-667-143	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH FWD
4							1			D206-667-243	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH AFT
5								1		D407-667-145	CROSSTUBE ASSEMBLY, 407 HIGH FWD
6									1	D407-667-245	CROSSTUBE ASSEMBLY, 407 HIGH AFT
10				*2	*2	*2		*2		D2891-1	SUPPORT
11							*2			D2892-1	SUPPORT
12									*1	D2894-1	SUPPORT
13				*2	*2	*2		*2		D2856-400-694	ABRASION STRIP
14							*2		*2	D2856-400-773	ABRASION STRIP
15									*1	D2856-600-851	ABRASION STRIP
16				*4	*4	*4		*4		MS21920-20	CLAMP
17							*4		*4	MS21920-22	CLAMP
18									*2	MS21920-24	CLAMP
19				4	4	4		4		AN5-32A	BOLT
20							4		4	AN5-34A	BOLT
21				4	4	4	4	4	4	MS21042L5	NUT (OR MS21042-5)
22				8	8	8	8	8	8	AN960JD516	WASHER
23									*2	D3190-1	CHAFING SHIELD
30	8									AN4-6A	BOLT
31	8									AN4-7A	BOLT
32	16									AN960JD416	WASHER
33	2									D3193-041	SPACER BLOCK ASSEMBLY
40		2		*2		*2	*2	*2	*2	D2873-043	NUT PLATE
41		2		*2		*2	*2	*2	*2	D2873-045	NUT PLATE
42			2		2					D2872-043	NUT PLATE
43			2		2					D2872-045	NUT PLATE
44		10		10		10				AN5-7A	BOLT
45		10	10		10		10	10	10	AN5-10A	BOLT
46		4	4	4	10	4		4		AN5-30A	BOLT
47		4					4		4	AN5-32A	BOLT
48		18	18	10	12	10		10	10	AN960JD516	WASHER
49		4	4		6					MS21042L5	NUT (OR MS21042-5)

*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-141/241/143/243, & D407-667-145/245 ASSEMBLIES ABOVE

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



LIQUID PENETRANT TEST REPORT

P- 15318

PAGE 1 OF 1

IN

EXAMINED

DPT AERUSPACE

DATE

FEB 11-2010

TIME AM ☒ PM ☐

LINDA / CHARTER

ACUREN JOB NO.

188-10-0051

127K ABEIDEN ST.

PO/WO No.

11364

MARKESBURY IN. KGH 1K7

WORK LOCATION

SHCO

ACCEPTANCE STD.

ASTM 1417

REV./DATE 2007

F.P.I. on

CROSS TUBES

E

FCS

DESCRIPTION	PROCEDURE NO. LT-002 REV./DATE	TECHNIQUE NO. LT-TECH 2 REV./DATE
MATERIAL ALUMINUM THICKNESS		
WET FLUORESCENT LIQUID PENETRANT INSPECTION		
CARRIED OUT 100% EXTERNAL		
DETAILS		
<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH
<input type="checkbox"/> SOLVENT REMOVABLE	<input type="checkbox"/> POST EMULSIFIED	
BRAND MASFLUX	BLACK LIGHT S/N 10459	<input checked="" type="checkbox"/> OUTPUT > 1000 μ W/CM ²
INT 2407	MINIMUM DWELL TIME 45 MIN.	<input type="checkbox"/> FLASHLIGHT
INT REMOVER 120	MINIMUM DRY TIME > 10 MIN.	<input type="checkbox"/> TROUBLELIGHT
PER SKD 52	MINIMUM DWELL TIME 10 MIN.	<input type="checkbox"/> OUTPUT > 100 fc @ SURFACE
PER TYPE <input checked="" type="checkbox"/> NON AQUEOUS	<input type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY
SURFACE		
CONDITION <input type="checkbox"/> AS GROUND	<input type="checkbox"/> AS WELDED	<input checked="" type="checkbox"/> MACHINED
TEMPERATURE <input type="checkbox"/> < -4°C/20°F	<input type="checkbox"/> -4°C/20°F TO 10°C/50°F	<input checked="" type="checkbox"/> SHOT BLASTED
		<input type="checkbox"/> CLEAN BARE METAL
		<input type="checkbox"/> > 52°C/125°F
TS- <input type="checkbox"/> METRIC <input type="checkbox"/> IMPERIAL		

CROSS TUBE W.C. 55759 ✓
CROSS TUBE W.C. 55760 ✓
CROSS TUBE W.C. 55777 ✓
CROSS TUBE W.C. 55780 ✓

CROSS TUBE W.C. 55781 ✓
CROSS TUBE W.C. 55782 ✓
CROSS TUBE W.C. 55134 ✓
CROSS TUBE W.C. 55135 ✓

ALL ITEMS EXAMINED ON
THIS REPORT HAVE BEEN
ACCEPTED TO STANDARD.

MA 10.02.17

Services

Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that the opinions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

of Care

Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

TECHNICALS

REPRESENTATIVE	PRINT	SIGNATURE	DTR # E27362
TECHNICIAN (SIGNATURE):	PRINT	SIGNATURE	REPORT REVIEWED BY:
(PRINT):	TECHNICIAN	TECHNICIAN	NAME INITIALS
CGSB LEVEL 2	SNT LEVEL II	CGSB LEVEL	SNT LEVEL
CGSB REG. NO. 6606	CGSB REG. NO.		

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